

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An analog electronic timepiece comprising:
a clock signal supplying unit configured to generate and supply a reference signal for
clocking;
a step motor that drives hand motions of time hands;
a driving unit that drives has a signal line to drive the step motor;
an amplifying unit configured to amplify a counter electromotive force generated by
the step motor;
an impact detecting unit configured to detect an impact applied externally based on an
output signal level of ~~a counter electromotive force generated by the step motor amplifying~~
~~unit~~; and
a controlling unit configured to control to drive the step motor by providing an
intermittent driving pulse to the driving unit based on the reference signal supplied from the
clock signal supplying unit when the time hands are in a hand-driven state, and to control to
brake the step motor when an impact is detected by the impact detecting unit while the time
hands are in a non-hand-driven state, wherein
the controlling unit is configured to control [(a)] the signal line of the driving unit
~~for driving the step motor to be in an OPEN state when the time hands are open~~ in the non-
hand-driven state, except ~~for a time period before and/or after the driving when a pulse is~~
~~output from the amplifying unit during which the controlling unit controls the signal line to be~~
in a HIGH or a LOW state.

2. (Currently Amended) The An analog electronic timepiece ~~according to claim~~
~~48, comprising:~~
a clock signal supplying unit configured to generate and supply a reference signal for
clocking;

a step motor that drives hand motions of time hands;
a driving unit that has a signal line to drive the step motor;
an amplifying unit configured to amplify a counter electromotive force generated by the step motor;
an impact detecting unit configured to detect an impact applied externally based on an output signal level of the amplifying unit; and
a controlling unit configured to control to drive the step motor by providing an intermittent driving pulse to the driving unit based on the reference signal supplied from the clock signal supplying unit when the time hands are in a hand-driven state, and to control to brake the step motor when an impact is detected by the impact detecting unit while the time hands are in a non-hand-driven state,

wherein the controlling unit is configured to control the signal line to be in an OPEN state when the time hands are in the non-hand-driven state, except when a pulse is output from the amplifying unit during which the controlling unit controls the signal line to be in a HIGH or a LOW state,

wherein the impact detecting unit detects the impact based on an output signal level of the amplifying unit,

wherein an amplification ratio of the amplifying unit is set to a value that corresponds to at least one of a weight and a moment of inertia of the time hands, and

wherein the amplifying unit is a chopper-amplifying unit configured to amplify at the amplification ratio based on a predetermined pulse period, and the predetermined pulse period is set to a value that corresponds to at least one of the weight and the moment of inertia of the time hands.

3. (Previously Presented) The analog electronic timepiece according to claim 2, wherein the predetermined pulse period of the chopper-amplifying unit is set further to a value that corresponds to a power source voltage.

4. (Canceled).

5. (Previously Presented) The analog electronic timepiece according to claim 2, wherein in the chopper-amplifier unit, a chopper-width is set to 30.5 ms.

6. (Previously Presented) The analog electronic timepiece according to claim 1, wherein the controlling unit includes a lock pulse output unit configured to control the step motor when the impact is detected, and the lock pulse output unit outputs a lock pulse for a term corresponding to a power source voltage supplied to the step motor.

7. (Previously Presented) The analog electronic timepiece according to claim 6, wherein the lock pulse output unit is configured to output a continuous pulse having a same phase as that of the driving pulse generated when the impact is detected.

8. (Previously Presented) The analog electronic timepiece according to claim 6, wherein the lock pulse output by the lock pulse output unit includes at least a lock term for outputting a continuous pulse and a stable section for outputting an inversed pulse after the lock term has passed.

9. (Previously Presented) The analog electronic timepiece according to claim 1, wherein the controlling unit includes a load compensating unit configured to detect rotation of a rotor based on detection of a counter electromotive force from a pulse motor soon after the output of the driving pulse.

10. (Previously Presented) The analog electronic timepiece according to claim 1, wherein the controlling unit is configured to provide stable terms respectively for starting a rotor of a pulse motor from a stationary stable point thereof before outputting the driving pulse, and for returning the rotor of the pulse motor to the stationary stable point thereof after outputting the driving pulse.

11. (Previously Presented) The analog electronic timepiece according to claim 1, wherein the impact detecting unit includes inverters that operate based on supply of a source power that is adapted to supply a constant voltage without depending on a power source voltage.

12. (Previously Presented) The analog electronic timepiece according to claim 9, wherein

the impact detecting unit includes an impact detecting resistor configured to detect a counter electromotive force from the pulse motor at the time of the impact, and

the load compensating unit includes a load compensating resistor configured to detect a counter electromotive force from the pulse motor soon after the driving pulse is output.

13. (Previously Presented) The analog electronic timepiece according to claim 12, wherein the impact detecting resistor has a resistance value set at the minimal resistance value with which the rotation of the pulse motor is detected.

14. (Previously Presented) The analog electronic timepiece according to claim 12, wherein setting of the impact detecting resistor is set for each type of timepiece.

15. (previously presented) The analog electronic timepiece according to claim 9, further comprising a detecting resistor used commonly for impact detecting and for load compensating, wherein

the impact detecting unit uses the detecting resistor to detect a counter electromotive force from the pulse motor at the time of the impact, and the load compensating unit uses the detecting resistor to detect a counter electromotive force from the pulse motor soon after the driving pulse is output.

16. (Previously Presented) The analog electronic timepiece according to claim 6, wherein the lock pulse output unit is configured to secure an output term of the lock pulse when the lock pulse is input at a time of a logic frequency adjustment executed at predetermined intervals.

17. (Previously Presented) The analog electronic timepiece according to claim 6, further comprising a battery detection controlling unit configured to make the output of the lock pulse precede when the lock pulse is output from the lock pulse output unit at a time of detection of a power source voltage executed at predetermined intervals.

18. (Currently Amended) The analog electronic timepiece according to claim 1, ~~further comprising an amplifying unit configured to amplify the counter electromotive force,~~ wherein

the impact detecting unit detects the impact based on an output signal level of the amplifying unit, and

an amplification ratio of the amplifying unit is set to a value that corresponds to at least one of a weight and a moment of inertia of the time hands.

19. (Currently Amended) The An analog electronic timepiece according to claim 12, comprising:

a clock signal supplying unit configured to generate and supply a reference signal for clocking;

a step motor that drives hand motions of time hands;

a driving unit that has a signal line to drive the step motor;

an amplifying unit configured to amplify a counter electromotive force generated by the step motor;

an impact detecting unit configured to detect an impact applied externally based on an output signal level of the amplifying unit; and

a controlling unit configured to control to drive the step motor by providing an intermittent driving pulse to the driving unit based on the reference signal supplied from the clock signal supplying unit when the time hands are in a hand-driven state, and to control to brake the step motor when an impact is detected by the impact detecting unit while the time hands are in a non-hand-driven state,

wherein the controlling unit is configured to control the signal line to be in an OPEN state when the time hands are in the non-hand-driven state, except when a pulse is output from the amplifying unit during which the controlling unit controls the signal line to be in a HIGH or a LOW state,

wherein the controlling unit includes a load compensating unit configured to detect rotation of a rotor based on detection of a counter electromotive force from a pulse motor soon after the output of the driving pulse,

wherein the impact detecting unit includes an impact detecting resistor configured to detect a counter electromotive force from the pulse motor at the time of the impact,

wherein the load compensating unit includes a load compensating resistor configured to detect a counter electromotive force from the pulse motor soon after the driving pulse is output,

wherein the detecting resistor is a variable resistor, and
wherein the resistance value of the detecting resistor switches between a first
resistance value used for impact detection and a second resistance value used for load
compensation.

20. (New) The analog electronic timepiece according to claim 15, further
comprising an OR gate that connects the impact detecting unit and the load compensating unit
to the detecting resistor used commonly for impact detecting and for load compensating.

21. (New) The analog electronic timepiece according to claim 1, wherein the
signal line being in the OPEN state allows a current generated by the counter electromotive
force to travel thereon.